CLAIMS:

1. A method for synchronizing a satellite positioning device having a local clock with a non-satellite signal comprising the steps of:

a) receiving said non-satellite signal at a first time;

b) calculating a clock correction based at least in part on said first time;

c) applying said clock correction to the local clock of the satellite signal processor.

2. The method of claim 1 wherein said steps a) – c) are repeated each time said non-satellite signal is received.

3. The method of claim 1 wherein said step of calculating a clock correction further comprises the steps of:

determining a local time *t* based on said local clock;

determining a time T_{event} as said first time with reference to local time *t*;

determining a time offset T_{offset} as between satellite time and local time *t*;

adding one half of an epoch period to T_{offset} if T_{offset} is greater than 0;

subtracting one half of an epoch period from T_{offset} if T_{offset} is not greater than 0;

calculating a clock correction T_{corr} as

$$T_{corr} = T_{epoch} - \mathrm{mod}\left(\frac{T_{event}}{T_{epoch}}\right) - T_{epoch} \times \mathrm{int}\left(\frac{T_{offset}}{T_{epoch}}\right)$$; and

applying said clock correction T_{corr} to said local clock.

4. The method of claim 1 wherein said non-satellite signal is a laser beam generated by a rotating laser transmitter.

5. The method of claim 4 wherein the period of said rotating laser transmitter is substantially equal to said epoch period.

6. The method of claim 4 wherein said laser beam has an N shape.

7. A satellite positioning device comprising:

a local clock;

a satellite signal processor for processing satellite signals and generating position information, whereby timing epochs of said processing are based on said local clock;

a non-satellite signal processor for processing received non-satellite signals; and

a time difference module for generating a clock correction signal based at least in part on the time of receipt of said non-satellite signals.

8. The satellite positioning device of claim 7 wherein said non-satellite signal processor is a laser signal processor.

9. The satellite positioning device of claim 8 further comprising a laser detector connected to said laser signal processor.

10. The satellite positioning device of claim 7 wherein said time difference module is configured to generate a clock correction signal by performing the steps of:

determining a local time *t* based on said local clock;

determining a time T_{event} as the time of receipt of a non-satellite signal with reference to local time *t*;

determining a time offset T_{offset} as between satellite time and local time *t*;

adding one half of an epoch period to T_{offset} if T_{offset} is greater than 0;

subtracting one half of an epoch period from T_{offset} if T_{offset} is not greater than 0;

calculating a clock correction T_{corr} as

$$T_{corr} = T_{epoch} - \mathrm{mod}\left(\frac{T_{event}}{T_{epoch}}\right) - T_{epoch} \times \mathrm{int}\left(\frac{T_{offset}}{T_{epoch}}\right).$$

11. A method for use in a satellite positioning device which generates final position information based on received satellite signals and at least one received non-satellite signal, said method comprising the steps of:

periodically calculating satellite position information at each of a plurality of epochs, said epochs defined by a local clock;

periodically calculating non-satellite position information based on said non-satellite signal at each of a plurality of event times, said event times defined by time of receipt of said non-satellite signals;

periodically calculating final position information based on said satellite position information and said non-satellite position information; and

applying clock corrections to said local clock to improve the synchronization of said epochs and said event times.

12. The method of claim 11 wherein said non-satellite signal is a laser signal received from a rotating laser transmitter.

13. The method of claim 11 wherein said clock corrections are based at least in part on said event times.

14. The method of claim 11 further comprising the steps of:

determining a local time *t* based on said local clock;

determining a time T_{event} as an event time with reference to local time *t*;

determining a time offset T_{offset} as between satellite time and local time *t*;

adding one half of an epoch period to T_{offset} if T_{offset} is greater than 0;

subtracting one half of an epoch period from T_{offset} if T_{offset} is not greater than 0; and

calculating a clock correction T_{corr} as

$$T_{corr} = T_{epoch} - \mathrm{mod}\left(\frac{T_{event}}{T_{epoch}}\right) - T_{epoch} \times \mathrm{int}\left(\frac{T_{offset}}{T_{epoch}}\right).$$

15. A satellite positioning device comprising:

a local clock;

means for receiving said non-satellite signal at a first time;

means for calculating a clock correction based at least in part on said first time; and

means for applying said clock correction to the local clock of the satellite signal processor.

16. The satellite positioning device of claim 15 wherein said means for calculating a clock correction further comprises:

means for determining a local time t based on said local clock;

means for determining a time T_{event} as said first time with reference to local time t;

means for determining a time offset T_{offset} as between satellite time and local time t;

means for adding one half of an epoch period to T_{offset} if T_{offset} is greater than 0;

means for subtracting one half of an epoch period from T_{offset} if T_{offset} is not greater than 0;

means for calculating a clock correction T_{corr} as

$$T_{corr} = T_{epoch} - \mathrm{mod}\left(\frac{T_{event}}{T_{epoch}}\right) - T_{epoch} \times \mathrm{int}\left(\frac{T_{offset}}{T_{epoch}}\right);$$ and

means for applying said clock correction T_{corr} to said local clock.

17. The satellite positioning device of claim 15 wherein said non-satellite signal is a laser beam generated by a rotating laser transmitter.

18. The satellite positioning device of claim 17 wherein said laser beam has an N shape.